

FES2023 International Conference on Future Energy Solutions

12–14 June
2023

fesconferences.com







Miadreza Shafie-khah –
General Chair

Welcome Message

FES2023 is a golden opportunity to hear new research, ideas, and initiatives; as well as interact with key decision leaders in energy-related fields.

On behalf of all chairs and program committee members, I am honored to welcome you to International Conference on Future Energy Solutions – FES2023.

The FES conference series are determined to establish itself as the venue that international delegates make presentations and discuss various issues including intelligent and sustainable solutions for future energy systems. I would like to use this opportunity to acknowledge the exceptional contributions of all TPC members, reviewers and all chairs, whose efforts were pivotal in helping make this vision a reality. A two-level review process was carried out for all submitted papers:

- 1st Stage: Full papers were thoroughly evaluated by **55** TPC members and **73** reviewers, averaging **2.1** reviews per paper.
- 2nd Stage: Revised full papers were also evaluated by the conference chairs.

Overall, **91** full papers by **393** co-authors from **40** countries were finally accepted to be presented.

Finally, we also have five hot topic workshops and the privilege of having three outstanding Keynote Speakers, all world-renowned experts in the field, who will be presenting keynote addresses on the most pressing and timely topics.

We aim at providing an opportunity to discuss various engineering challenges of future energy systems by focusing on advanced methods and practices for designing different components and their integration within modern and next-generation grids. We also hope to provide a forum for researchers from academia and professionals from industry, as well as government regulators to tackle these challenges, and discuss and exchange knowledge and best practices about solutions for future energy systems.

I hope that you will enjoy FES conference and workshops with its outstanding keynote presentations. Thank you very much!

Miadreza Shafie-khah
General Chair of FES2023

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Conference Program

Day 1 – Mon 12 June

Day 2 – Tue 13 June

Day 3 – Wed 14 June

8:30–9:00			Registration						
9:00–9:30	Registration		Keynote Speaker 3		Exhibition & Match Making	Registration			
9:30–10:00	Opening & Keynote Speaker 1					Session 3: COLLECTiEF and Protec- tion	Panel Session: DiTArtiS	Session 7: Energy Management & Business Model	Workshop 4: Electricity Market & Energy Crisis
10:00–10:30									
10:30–11:00	Keynote Speaker 2								
11:00–11:30									
11:30–12:30	Lunch Break		Lunch Break			Lunch Break			
12:30–14:30	Session 1: Electric Vehicles and Smart Cities	Workshop 1: Batteries and Applications for Ancillary Services	Session 4: Power Electronics and Electric Drives	Workshop 3: Energy Efficient Building and Smart Cities	Exhibition & Match Making	Session 8: Optimization and Stability	Workshop 5: Prosumer-Centric Local Energy Communities		
14:30–15:00	Coffee Break		Coffee Break			Coffee Break			
15:00–17:00	Session 2: Energy Market	Workshop 2: Substation Auto- mation System	Session 5: Industrial Applications	Session 6: Artificial Intelligence	Exhibition & Match Making	Closiong Session and Competition Awards			
17:00–18:30	Welcome Reception								
18:30–22:00			Gala Dinner and Best Paper Awards						



Conference Venue

The technical program of FES2023 (sessions, keynote addresses and workshops) will take place at the **Wasa Innovation Center**

Address: Gerbyntie 16, 65230 Vaasa

Daily lunch and coffee breaks will also be served in this location.

Guidelines for online attendees

The online part of conference will use Zoom platform. We recommend that you install the Zoom client: <https://zoom.us/support/download>. If it is not possible to install this client, then you can use the HTML Web client. You can test if you can access a Zoom meeting via <https://zoom.us/test>. The audio for this conference is delivered through your computer. Before joining the conference, make sure to have your headset and microphone connected. Having a webcam can increase the interactivity but is not strictly necessary.

Presenting authors must be present in the session at least 10 minutes before the start of the session. Be ready to answer questions from the participants and the session chairs after your MP4 video or PPT slides are presented. Session chairs will announce and manage the Q&A period. Participants are invited to join and leave any session whenever they want. If you wish to ask a question, please type your question in the Chat window. Non-presenting authors must have the microphone muted during the presentations period.

Zoom Links:



FES2023 – RED Sessions

Opening Session + Keynote
Speakers 1–3, Sessions 1–5 +
Sessions 7–8

Meeting ID: 649 6532 7511
Password: FES2023

<https://uwasa.zoom.us/j/64965327511?pwd=RFc1K1lxY0NmbEtPUUVFdEFjNGxkUT09>



FES2023 – BLUE Sessions

Workshops 1-5, Session 6 and
Panel session DiArtIS

Meeting ID: 642 0313 3922
Password: FES2023

<https://uwasa.zoom.us/j/64203133922?pwd=aUdBTXRSbEd0TDFlcFQzS2o2V2Vydz09>

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Day 3 – Wed 14 June

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18:30–22:00			Gala Dinner and Best Paper Awards				

Important Information

Overall, there will be 91 paper presentations, which have been grouped into 8 sessions to ensure the best opportunities for attendees with different interests.

Minimized parallel sessions are envisaged; therefore, authors are able to attend most sessions.

Sessions have a total duration of 120 minutes. Presenting authors should be at their designated room or virtual room at least 15 minutes prior to the session. The duration of each presentation should not exceed 7 minutes, followed by around 2 minutes of Q&A and discussion.

Three consecutive keynote addresses will take place on the first and second day of the conference. Each keynote address will have a duration of about 45 minutes, followed by 15 minutes of Q&A and discussion.

With Technical co-sponsorship by IEEE, IEEE PES, and IEEE IAS, the **top 20 %** of accepted and presented **papers in FES2023** will be eligible for publication in **IEEE Transactions on Industry Applications**.





Day 1: **Prof. Nikos Hatziargyriou**

National Technical University of Athens, Greece

“The interaction of EV charging with the Distribution Grid”

Bio: Nikos Hatziargyriou received the Diploma in Electrical and Mechanical Engineering from National Technical University of Athens in 1976 and the MSc and PhD degrees from UMIST, Manchester, UK in 1979 and 1982, respectively. Since 1984 he is with the Power Division of the Electrical and Computer Engineering Department of NTUA and since 1995 he is full professor in Power Systems. Since April 2015 he is Chairman and CEO of the Hellenic Distribution Network Operator (DEDDIE). From February 2007 to September 2012, he was Deputy CEO of the Public Power Corporation (PPC) of Greece, responsible for Transmission and Distribution Networks, island DNO and the Center of Testing, Research and Prototyping. He is Fellow Member of IEEE, past Chair of the Power System Dynamic Performance Committee, Honorary member of CIGRE and past Chair of

CIGRE SC C6 “Distribution Systems and Distributed Generation”. He is co-chair of the EU Technology and Innovation Platform on Smart Networks for Energy Transition. He is member of the Energy Committee of the Athens Academy of Science. He has participated in more than 60 R&DD Projects funded by the EC and the industry and has coordinated among others, “CARE”, “MORE CARE”, “MERGE”, “Microgrids” and “More Microgrids”. He is Editor in Chief of the IEEE Transactions on Power Systems and member of the Editorial Board of IEEE Transactions on Sustainable Development and the IEEE Power and Energy magazine. He is author of the book “Microgrids: Architectures and Control” and of more than 200 journal publications and 500 conference proceedings papers. He is included in the 2016 Thomson Reuters’ list of the top 1% most cited researchers.



Day 1: **Prof. Fei Wang**, *North China Electric Power University (NCEPU), China*

“Power forecasting technology of large-scale grid-connected solar & wind generation clusters under diverse and complex terrain”

Bio: Fei Wang received the B.Sc. degree from Hebei University, Baoding, China in 1993, the M.Sc. and Ph.D. degree in Electrical Engineering from North China Electric Power University (NCEPU), Baoding, China, in 2005 and 2013, respectively. He is currently a Professor with the Department of Electrical Engineering, NCEPU and the State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, Baoding and Beijing, China. He is the Director of Institute of Power System Automation, the Director of Smart Energy Network Integrated Operation Research Center (SENIOR) and the Leader of “Double First-Class” research team project at NCEPU. He was a Visiting Professor with the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, USA, from 2016 to 2017. He was a Researcher with the Department of Electrical Engineering, Tsinghua University, Beijing, China, from 2014 to 2016. Prof. Wang is an Associate Editor of the IEEE Transactions on Sustainable Energy, the IEEE Transactions on Intelligent Transportation Systems, the IEEE Transactions on Industry Applications, the IEEE Power Engineering Letters, the IEEE Open Access Journal of Power and Energy, the IET Renewable Power Generation, the Frontiers in Energy Research, the Protection and Control of Modern Power Systems (Springer), and the E-Prime Journal (Elsevier). He was the Guest Editor-in-Chief for the Research Topic “Source-Grid-Load-Storage Collaborative and Interactive Optimization Control Technology of New Types of Active Distribution Network” of the Frontiers in Energy Research, and the Guest Editor for the

special issue “Demand Side Management and Market Design for Renewable Energy Support and Integration” of the IET Renewable Power Generation. He is an IEEE Senior Member and the Expert Member of IEC SC8A/WG2. He supervised more than 80 Postdocs, Ph.D. and M.Sc. students. He has authored or coauthored more than 260 publications, including 100 international journal papers. He was the recipient of the 2021 Elsevier China Highly Cited Scholar, the 2020 Science and Technology Progress First Award of Hebei Province, 2018 Technical Invention First Award of Hebei Province, the 2018 Patent Third Award of Hebei Province, the 2014 Natural Sciences Academic Innovation Achievement Award of Hebei Province, the 2018 China Electric Power Science and Technology Progress Third Award, and the 2014 Outstanding Doctoral Dissertation Award of NCEPU. He was the General Chair of the 2017 International Seminar of Renewable Energy Power Forecasting and Absorption Technology and 2018 International Seminar of Integrated Energy and Smart Microgrid Technology. He was the member of Series Steering Committee and Program Committee of 1st to 5th International Conference on Smart Energy Systems and Technologies (SEST) from 2018 to 2022. He was also the member of Scientific Advisory Board of 14th to 17th International Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES) from 2019 to 2022. His research interests include renewable energy power/electricity price/electricity load forecasting, electricity market, demand response, smart grid, microgrid and integrated energy system.



Day 2: **Prof. Zita Vale**, *Polytechnic of Porto, ISEP, GECAD, Portugal*

“Artificial Intelligence Models for Power and Energy Applications: From Data-Driven to Knowledge-Based Approaches”

Bio: Zita Vale is Principal Coordinator Professor at the School of Engineering (ISEP) of the Polytechnic of Porto (IPP) and Director of GECAD Research Group on Intelligent Engineering and Computing for Advanced Innovation and Developments. She is also a member of LASI – Associate Laboratory of Intelligent Systems, where she chairs the line on “Smart cities, mobility and energy”, one of the five LASI research lines. Her main interests regard the application of Artificial Intelligence Techniques to Power systems, including Knowledge based systems, Multi-agent systems, Neural Networks, Meta-heuristics, Optimization, Machine Learning, and Knowledge Discovery Techniques. She has been involved in more than 60 R&D projects from which she coordinated more than 30 projects. The main application fields of these projects are: – Smart Grids, with an intensive use of Renewable Energy Sources, Distributed Energy Resources and Distributed Generation, addressing the management of energy resources,

the negotiation of DER in electricity markets, demand response, and electric vehicles; – Electricity markets, addressing prices and tariffs, decision-support for market participants, ancillary services, derivatives market, pricing and market simulation. She published over 900 works, including more than 180 papers in international scientific journals. She has been contributing to renowned international conferences as a member of the Program Committee, Program Chair, reviewer, and organizing special and panel sessions. She has been also keynote speaker in several conferences, guest editor and/or member of editorial board of scientific international journals. She also contributes to several scientific and technical committees and working groups. Currently, she chairs the Institute of Electrical and Electronic Engineers (IEEE) Power and Energy Society (PES) Working Group on Data Analysis and Mining and Task Force on Open Data Sets.

List of Panel Sessions

Day 2: DiTArtIS Project

“Network of Excellence in Digital Technologies and AI Solutions for Electromechanical and Power Systems Applications”



**Main Speaker
and PI:**

Claudia Martis

Abstract: Digitalization is the key to fighting climate change and achieving the objectives of the European Green Deal, while contributing to the green energy transition, energy efficient buildings, sustainable transportation and industrial digital transformation. Digital technologies and AI solutions can deliver operational efficiencies and reduced costs in many industries, enable the development and implementation of smart energy/transport/building systems, increase the connectivity of people and systems. Digital transition and its successful implementation requires strengthening digital skills, at different levels, “from researchers taking a more analytical and empirical approach (looking at digital skills requirements and digital skills gaps), to policymakers

and providers of training programmes and skills development initiatives taking a practical approach (launching new programmes)”.

In this context, the mission of EU Horizon DiTArtIS project is to strengthen the research and innovation excellence of the beneficiaries, especially of UTC, as well as enhance the digital skills of their staff. This will be done through building teams of excellence to derive new ideas and tackle challenges, to ensure that UTC and twinning partners will sustainably increase scientific excellence and innovation capacity in the field of electromechanical and power systems applications, by integrating digital technologies and AI solutions and techniques.

Day 2: **COLLECTiEF Project**

“Collective Intelligence for Energy Flexibility”



**Main Speaker
and PI:**

**Mohammadreza
Aghaei**

Abstract: Sustainable and resilient urban energy solutions are essential to address climate change adaptation demands. With this in mind, the EU-funded COLLECTiEF project brought together 14 partners from six European countries to enhance the energy flexibility on both supply and demand sides. The consortium will implement and evaluate an interoperable energy management system based on collective intelligence. This will be integrated into existing building and urban energy systems aiming to reduce installation cost, data transfer and computational power. It will be installed in 13 buildings and 1 living laboratory at pilot sites in Cyprus, France, Italy and Norway. The findings will be used to formulate a business model for energy services.

The overall ambition of EU H2020 COLLECTiEF is to utilise the potential of collective intelligence to create a solution that allows and promotes circular energy flows among a large set of interacting processes within our energy systems, thus enabling maximum interoperability of the components and real-time interaction with the grid. Scalability based on the node concept is also an integral part of the COLLECTiEF system, thus enabling fast and efficient roll-out across Europe.

Conference Sessions

SESSION 1 – Mon, 12th June 2023

Electric Vehicles and Smart Cities

Time: 12:30–14:30 (EEST)

Chair: Emilio Ghiani, Yue Xiang

4531 Analysis and Evaluation Characteristics for Li-ion battery with impacts of ambient temperature on Pure Electric Vehicle
Pankhuri Kaushik and Manjeet Singh

7952 Analysis of real time charging Datasets: A Case Study of Slovenian village
Sanchari Deb, Chloe Fournely, Matej Pečjak and Tomi Medved

9655 Building energy flexibility assessment with static data
Stefan Boogaard, Dave Cheung and Tadeo Baldiri Salcedo Rahola

4039 Cooling system for Li-ion Battery of Pure Electric Vehicles
Pankhuri Kaushik, Manjeet Singh and Amandeep Gill

2980 Demand Response by Urban Multi-type Load Aggregators and Storage Systems in Power Grid
Jiawen Bai, Tao Ding, Shuhai Feng, Yangsheng Sun, Jingkai Zhu and Fan Su

8912 Energy Management Strategy based Charging Coordination for Electric Vehicle Integrated Distribution Grid
Tayebeh Faghihi, Shahab Sabzi and Laszlo Vajta

9297 From energy flexibility to design choice
Isa Dols and Tadeo Baldiri Salcedo Rahola

9825 Household Electricity Cost Optimization with Vehicle-to-Home Technology and Mixed-Integer Linear Programming
Johannes Einolander, Annamari Kiviaho and Risto Lahdelma

1696 Impacts of EV parking Lots on the distribution system operation considering voltage violation penalty cost
Mahoor Ebrahimi, Mahan Ebrahimi, Miadreza Shafie-khah and Hannu Laaksonen

4315 Optimal Sizing of PV and Storage in Collective Self-Consumption Groups in Condominiums
Riccardo Trevisan, Emilio Ghiani, Raphaele Papa, Sara Ruffini and Omar Caboni

4456 Techno-Economic Analysis of Electric Vehicle Parking Lots in Microgrids
Vahid Shahbazbegian, Hossein Ameli, Goran Strbac, Hannu Laaksonen and Miadreza Shafie-Khah

9412 Vulnerability of EV Charging stations to cyber attacks manipulating prices
Amirhossein Akbarian, Mahdi Bahrami, Mehdi Vakilian and Matti Lehtonen

SESSION 2 – Mon, 12th June 2023

Energy Market

Time: 15:00–17:00 (EEST)

Chair: Chunyi Huang, Bruno Canizes

8678 A Dynamic Capacity Sharing Model for User-side Energy Storage Station Considering Peer-to-peer Transactions
Fengbin An, Chunyi Huang, Kangping Li and Chengmin Wang

3530 Decentralized Approach for Energy Sharing in Local Energy Community based on ADMM Algorithm
Aria Kazemi Ravesh and Amin Shokri Gazafroudi

9109 Decoupling based Customer Baseline Load Estimation Method Considering Cross Effects of Composite Demand Response Programs
Lishan Ma, Chao Sun, Shengqiang Gao, Yingshan Wang, Xinxin Ge and Fei Wang

6477 Double layer scheduling mechanism in Virtual power plant
Huahu Cui, Zhang Qian and Wang Daxin

9385 H2020 Auto-DAN Project: Enhance the Participation of the Community to Demand Response by Providing the State-of-the-Art Technological and Policy Solution
Rene Peeren, Dharmesh Dabhi and John Dalton

8795 Identification and Prevention of Collusion among Power Producers in Power Market Based on Decision Tree
Yuchen Duan, Quan Chen, Qian Zhang, Changbao Zheng, Qile Zheng and Long Cheng

1255 Impact of a Regional- and Time-Dependent Minimum Remaining Available Margin on Market Coupling and Redispatch
Lukas Weber, David Meuthrath, Kevin Pacco and Albert Moser

199 Investigating the Effect of Demand Response on the Market Power of a Strategic Wind Power Producer
Homa Rashidizade-Kermani, Mostafa Vahedipour-Dahraie, Miadreza Shafie-Khah and Pierluigi Siano

4936 Pooling platform: A decentralized Local Energy Market Platform Based on Clustered Prosumer's Preferences
Godwin Okwuibe, Ksenia Vinogradova, Sören Klingner and Zhiwei Han

5657 Stochastic Programming Model for the Provision of Flexibility by Energy Communities
Emely Cruz De Jesús, Jose Luis Martínez Ramos and Alejandro Marano Marcolini

8767 Trading-coupled sequential operation simulation of distribution network with distributed prosumers
Yang Jianping and Yue Xiang

612 Two-stage Joint Bidding and Pricing Optimization Strategy for Load Aggregators in Demand Response Market
Xiongfei Li, Kangping Li, Chunyi Huang, Zhao Zhen and Fei Wang

SESSION 3 – Tue, 13th June 2023

COLLECTiEF and protection

Time: 10:00–11:30 (EEST)

Chair: Mohammadreza Aghaei

9513 A Review on Reliability Analysis: Approaches and Tools for Digital Substation

Rizwan Rafique Syed and Hans Kristian Høidalen

926 Topology Simulation and Design of Bidirectional Fault Current Limiter for DC BUS

Xin Li, Quan Chen, Qunjing Wang, Rui Zhou, Lufeng Ju and Xiwen Guo

4789 A Bi-Level Line-Line Fault Detection Model for Photovoltaic Arrays Using RBM-Based Automatic Feature Extraction

Amir Nedaei, Aref Eskandari, Jafar Milimonfared, Berhane Darsene Dimd, Umit Cali and Mohammadreza Aghaei

9059 A Holistic Study on Failures and Diagnosis Techniques in Photovoltaic Modules, Components and Systems

Mohammadreza Aghaei, Mohammad Kolahi, Amir Nedaei, Naveen Venkatesh Sridharan, Aref Eskandari, Aline Kirsten Vidal de Oliveira, Vaithyanathan Sugumaran, Ricardo Ruther, Sayyed Majid Esmailifar and Parviz Parvin

2571 A Smart Step-by-Step Method for Fault Detection and Severity Assessment in Photovoltaic Arrays

Amir Nedaei, Aref Eskandari, Jafar Milimonfared, Berhane Darsene Dimd, Umit Cali and Mohammadreza Aghaei

1489 Collective Intelligence for Energy Flexibility – COLLECTiEF: An EU H2020 Project for Enhancing Energy Efficiency and Flexibility in Existing Buildings

Mohammadreza Aghaei, Amin Moazami, Silvia Erba, Mohammad Hosseini, Italo Aldo Campodonico Avendano, Muhammad-Salman Shahid, Ignacio Torrens-Galdiz, Giuseppe Mastandrea, Runar Solli, Peter Riederer, Gloria Bevilacqua, Kavan Javanroodi, Panayiotis Papadopoulos, Salvatore Carlucci and Vahid M. Nik

1263 Indoor Thermal Comfort Analysis for Developing Energy-Saving Strategies in Buildings

Panayiotis M. Papadopoulos, Ioanna Kyprianou, Muhammad Salman Shahid, Silvia Erba, Frédéric Wurtz, Benoit Delinchant, Peter Riederer, Mohammadreza Aghaei and Salvatore Carlucci

SESSION 4 – Tue, 13th June 2023

Power Electronics and Electric Drives

Time: 12:30–14:30 (EEST)

Chair: Tiago Curi Busarello, José Pomilio

3734 A New ZCS Turn On Single-Switch High Step-Up DC-DC Topology with Voltage Multiplier Cells

Sohrab Abbasian, Mohammad Farsijani, Hikmat Basnet, Tomi Roinila and Hossein Hafezi

5848 Design of an FCS MPC-based three-phase four-leg bidirectional VSC for application in ac or dc microgrids

Victor Arruda, Joel Guerreiro and José Pomilio

5021 Distributed Finite-Time Secondary Control for DC Microgrids with Reduced Internetwork Data Transmission Dependency

Amir Basati, Saeid Bashash, Josep M. Guerrero and Juan C. Vasquez

5918 Dual-Input High Gain DC-DC Converter with Two Energy Storage Systems for Light EV Applications

Balapanuru Obulapathi, Makarand M Lokhande and Mohan V Aware

645 Flatness-based control in successive loops for VSI-fed induction motors

Gerasimos Rigatos, Pierluigi Siano, Mohamed Al-Numay and Masoud Abbaszadeh

2191 Hierarchical coordinated control of DC multi-port power electronic equipment

Xin Tian, Quan Chen, Guoli Li, Jiazi Xu, Qile Zheng and Long Cheng

2911 Open-Source Steady State Integration of Wave Energy Converter Models into Microgrids

Alexander Barajas-Ritchie, Derek Jackson, Eduardo Cotilla-Sanchez and Yue Cao

8098 Optimal Efficient control of a Parallel Multi-Units System

Mohamed Bahloul and Shafi Khadem

8745 Research on topology optimization of high-voltage DC circuit breaker based on controllable capacitor oscillation

Lufeng Ju, Rui Zhang, Yan Wen, Zhong Chen, Quan Chen and Jiazi Xu

7324 Simplified Control Strategies for Power Converters in a Grid-Connected Hybrid DC-AC Microgrid

Tiago Davi Curi Busarello, Marcelo Godoy Simões, Hannu Laaksonen and Kimmo Kauhaniemi

5390 Single-Phase Grid-Connected Fault Tolerant Bi-directional Power Flow Converter for Electric Vehicle Charging System

Anup Kumar, Mohan Aware, B. S. Umre and Manoj Waghmare

354 Voltage and Power Balance Improvement in Bipolar DC-Microgrids Using feedback linearization method

Mohamad Amin Ghasemi, Seyed Fariborz Zarei and Ehsan Heydarian-Forushani

SESSION 5 – Tue, 13th June 2023

Industrial Applications

Time: 15:00–17:00 (EEST)

Chair: Yilu Liu, Mazaher Karimi

9064 A wake loss model asymmetry induced by the circulation of a vertical axis wind turbine

Reza Hassanian, Ásdís Helgadóttir and Morris Riedel

1548 Application Example of Environmental and Energy Cost-based Conductor Size Optimization (ECSO) in Major Factory Wiring

Daigo Yonetsu, Takeshi Yano and Kazuhiko Masuo

3299 Wavelet-Based Hybrid Energy Storage System for Smoothing Electric Tractor Power Fluctuations

Long Cheng, Yaqian Yang, Quan Cheng and Guoli Li

5981 Assessing the Potential of Green Hydrogen in Decarbonizing Off-Grid Amazonian Communities

Aline Kirsten Vidal de Oliveira, Daniel Odilio dos Santos, Riley Orabona, Kevin Luiz Rocha de Azevedo, Mohammadreza Aghaei, Helena Napolini and Ricardo Rüther

6382 Cyber-Physical Design and Implementation of Service Restoration Framework for Islanded Power Systems

Chaudhry Talha Hassan

4806 Design and Modeling an Energy Village for Refugees and Host Communities in Uganda

Kasim Kumakech, Hillary Kasedde and John Kirabira

5070 Estimating the Energy Demand of a Hydrogen-Based Long-Haul Air Transportation Network

Julia Gaubatz, Estelle Martin, Ayaka Miyamoto, Blanca Murga, Peter Sharpe, Marek Travník, Allison Tsay, Juju Z. Wang and R. John Hansman

3250 Integration of Fixed-Carrier Planetary Gear Drive Train to Enhance the Efficiency of Wind Energy Systems

Youssef Tohamy and Horst Schulte

2625 Investigation of the Viability of Fuel Cell Systems for Sustainable Aviation

Mahdiye Khorasani, Ali Mashayekh and Christian Trapp

1681 Load Factor Improvement on Clustered Load Demand for Reducing Electrical Cost: A Case Study at Bangkok Water Treatment Plant

Soraphon Kigsirisin and Onurai Noohawm

1509 Modeling A Notional Carbon-Free Power Grid with 24-hour Dispatch and Power Flow

Hongyu Li, Melanie Bennett, Jinning Wang, Samuel Okhuegbe, Adedasola Ademola, Khaled Alshuaibi, Chang Chen, Xinlan Jia, Min Lin, Waleed Albukhari, Yuqing Dong and Yilu Liu

5604 Modeling Demand Side Management in European Resource Adequacy Assessments

Kevin Pacco, Dung Nguyen, Lukas Weber and Albert Moser

5214 Process Monitoring and High Efficiency Solutions as the Future of Energy Saving in Industrial Applications

Daria Kepsu, Jouni Ikäheimo and Alex D'Anci

5720 Voltage Main Harmonic Level Influence on Harmonic Current Emission Modeling

Kamran Daniel, Lauri Kütt, Muhammad Naveed Iqbal, Noman Shabbir, Marek Jarkovoi and Martin Parker

SESSION 6 – Tue, 13th June 2023

Artificial Intelligence

Time: 15:00–17:00 (EEST)

Chair: Mohammadreza Aghaei, Mohammed Elmusrati

3963 A Two-stage Short-term Load Forecasting Method Based on Comprehensive Similarity Day Selection and CEEMDAN-XGBoost Error Correction

Shuya Lei, Xiao Liang, Xuwei Xia, Haonan Dai, Chenhao Zhang, Xinxin Ge and Fei Wang

3543 Intelligent Lightning Hazard Warning System for a Wind Farm

Hossein Foroozan, Bojan Franc and Mario Vašak

3432 Risk Assessment of Machine Learning Algorithms on Manipulated Dataset in Power Systems

Diaba Sayawu, Miadreza Shafie-Khah, Mike Mekkanen, Tero Vartiainen and Mohammed Elmusrati

3364 Safe Reinforcement Learning-Based Control in Power Electronic Systems

Daniel Weber, Maximilian Schenke and Oliver Wallscheid

2018 Long-Term Electrical Energy Forecasting of the Residential Sector Using the LSTM Model: The Italian Use Case

Dmitrii Vasenin, Marco Pasetti, Stefano Rinaldi, Pavel Golovinski and Nikita Savvin

885 Overload Mitigation in Electric Vehicle Smart Charging Algorithms Using Photovoltaic Generation Forecasting

Lucas Terada, Juan Carlos Cortez, Juan Lopez, João Soares, Zita Vale and Marcos Rider

564 Advanced Classification of Failure-Related Patterns on Solar Photovoltaic Farms Through Multiview Photogrammetry Thermal Infrared Sensing by Drones and Deep Learning

Yahya Zefri, Mohammadreza Aghaei, Hicham Hajji, Ghassane Aniba and Imane Sebari

8460 Forecasting Crude Oil Prices using a Hybrid Model Combining Long Short-Term Memory Neural Networks and Markov Switching Model

Vahid Shahbazbegian, Hamid Hosseini-saz, Mohammed Elmusrati and Miadreza Shafie-Khah

5548 Digital Twins: Shaping the Future of Energy Systems and Smart Cities through Cybersecurity, Efficiency, and Sustainability

Umit Cali, Berhane Darsene Dimd, Parisa Hajjaligol, Amin Moazami, Sri Nikhil Gupta Gourisetti, Gabriele Lobaccaro and Mohammadreza Aghaei

1477 Extracting Cell Images from Ultraviolet Fluorescence Images of Photovoltaic Modules

Timon Benz, Aline Kirsten Vidal de Oliveira, Mohammadreza Aghaei, Marcus Rehm and Ricardo Rüther

SESSION 7 – Wed, 14th June 2023

Energy Management & Business Model

Time: 9:30–11:30 (EEST)

Chair: Bruno Canizes, Mario A. Mejia

5862 A Mixed-Integer Linear Programming Approach to Maintenance Budgeting in Electrical Distribution Networks Considering Repair Time Uncertainty
Hamed Mirsaeeadi, Alireza Hassankashi, Mahsa Sajjadi and Pierluigi Siano

8501 A Resiliency-oriented Optimal Operation of Microgrids Considering Electric Vehicles
Seyed Farhad Zandrazavi, Alejandra Tabares, John Fredy Franco, Miadreza Shafie-Khah, João Soares and Zita Vale

1233 Barriers to Community Microgrids in Fragmented Communities: Insights from a Case Study
Melissa Eklund, Kaveh Khalilpour, Jahangir Hossain and Alexey Voinov

5253 BESS Viability analysis for PV Power Plant Clipping Loss Minimisation
Mohamed Bahloul, David Horan and Shafi Khadem

905 Business model innovation in the Finnish power electricity sector
Rodrigo Rabetino, Marko Kohtamäki, Nayeem Rahman and Tuomas Huikkola

8048 Collective Citizen Energy Investment Models for Solar Power: Case Study Croatia
Lin Herenčić, Tomislav Capuder, Mislav Kirac and Goran Čačić

1426 Creating Systemic Energy Solutions for Carbon Neutral Society: A case for Dynamic Collaboration Capability
Sari Kola and Tauno Kekäle

301 Energy applications for network planning and congestion management: the SYNERGY project Greek demo
Angeliki Lydia Antonia Syrri, Andreas Gatos, Manos Zalokostas, Eleni Daridou, Dimitrios Stratogiannis, Dimitris Skipis, Aris Dimeas and Nikolaos Hatzigiorgi

9455 Method for the Efficient Determination of Transformation Paths for Sector-Integrated Energy Systems
Julian Walter, Falko Wähner, Leonie Rudolph, Henrik Schwaeppe and Albert Moser

2733 Multi-Objective Distribution System Planning Considering Non-Utility-Owned Distributed Generation and CO2 Emissions Costs
Mario A. Mejia, Leonardo H. Macedo, John F. Franco, Gregorio Muñoz-Delgado and Javier Contreras

8974 Production and Maintenance Scheduling for Total Cost and Machine Longevity Optimization
Bruno Mota, Pedro Faria, Bruno Canizes and Carlos Ramos

7211 Towards Carbon-Neutral Cities: The Crucial Role of Social Participation
Naghmeb Mohammadpourlima, Mikael Nygård and Mehdi P. Heris

SESSION 8 – Wed, 14th June 2023

Optimization and Stability

Time: 12:30–14:30 (EEST)

Chair: Rasoul Azizipanah Abarghooee, Kangping Li

6517 A Brief Review on Optimal Network Planning Considering Energy Storage Systems and Uncertainty
Fabio Castro, Bruno Canizes, João Soares and Zita Vale

8252 Advanced Optimization Algorithm to guarantee (n-1)-security in Curative Congestion Management
Jonas Mehlem, Christian Gerdon and Albert Moser

1296 Analyzing the TVS Influenced by IOSS to Assess the Power Load Buses in Power Systems
Vinh Quang Luu Huu

1230 Assessment of Frequency and Rotor Angle Stability of Integrated Nepal Power System
Amrit Parajuli, Rashna Shrestha, Ananta Adhikari and Samundra Gurung

3430 Battery Energy Storage System Performance during Black-Start and Voltage and Frequency Disturbances
Mahsa Bagheri Tookanlou, Mostafa Malekpour, Rasoul Azizipanah Abarghooee, Mazaher Karimi and Bahaa Eltahawy

3141 Beyond SCR in Weak Grids: Analytical Evaluation of Voltage Stability and Excess System Strength
Aleksandar Boricic, Jose Luis Rueda Torres and Marjan Popov

9468 Case study of an integrated expansion planning of coupled large urban electricity, gas and heat grids
Marlon Koralewicz, Joshua Jakob, Bastian Bauhaus and Markus Zdrallek

9791 Complexity of meshed and bidirectional maritime DC-System Simulations
Jana Ihrens, Shayan Bahadori Rad and Thorsten A. Kern

7142 Considerations of the Limitations of RES Hosting Capacity at the Transmission System Level
Eugenia Kritikou, Alexandros Paspatis, Nikos Hatzigargyriou and Emmanuel Karapidakis

468 Effect of Periodic Modulation Strategies on the Sideband Vibration and Noise in PMSMS
Wenzhe Deng, Zhe Qian, Guoli Li, Zehui Sun, Rui Zhou and Cheng Qian

9233 Multi-objective generation and transmission expansion planning: An economic and technical point of view
Shiva Amini, Innocent Kamwa, Shabbo Nahvi and Hemin Golpira

2383 Two-objective Approach for Electrical Vehicles Parking lot Participation in Joint Energy, and Ancillary Services Markets
Ahmad Nikpour, Abolfazl Nateghi and Miadreza Shafie-Khah

Notes
